successful surgical orchiopexy at a later date. Laparoscopy in the diagnosis and treatment of nonpalpable undescended testes should not be considered a necessity, but it can be useful when done by a surgeon proficient in the technique.

Laparoscopic pelvic lymph node dissection to stage urologic malignancy and laparoscopic varicocele ligation have also been reported with good results and appear to be as effective, with equal or less morbidity, as open surgical procedures. The laparoscopic approach is particularly attractive in the staging of prostate and perhaps bladder cancer, as the documentation of metastatic disease by laparoscopy may spare a patient an extensive surgical exploration. Once again, in these indications, laparoscopy should be viewed as an option, possibly beneficial in certain selected patient populations when done by an experienced practitioner, and not as a requirement in the care of these diseases.

Other procedures are now being described in reports from clinical practice or animal laboratories. For example, human nephrectomy has already been performed laparoscopically. Although theoretically there are few limits to the extent to which this technology can be advanced, each potential "advance" must be compared with standard therapy to determine its clinical usefulness, if any.

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Extracorporeal Shock-Wave Lithotripsy With Minimal or No Anesthesia

EXTRACORPOREAL SHOCK-WAVE LITHOTRIPSY (ESWL) has revolutionized the treatment of patients with nephrolithiasis and ranks as one of the great accomplishments of the past decade in medicine. Since its clinical introduction in Germany in 1980 and in the United States in 1984, ESWL has become the procedure of choice for most patients with nephrolithiasis requiring surgical treatment. With literally hundreds of thousands of patients treated worldwide to date, its safety record also compares favorably with any other surgical procedure. Today, major efforts are directed toward improving the ease of ESWL treatment for both patients and physicians, with special emphasis on decreasing anesthesia requirements.

Extracorporeal shock-wave lithotripsy procedures with the German-made Dornier HM3 machine, the original or "first-generation" lithotriptor that remains in popular use, nearly always require either general or regional (spinal or epidural) anesthesia. This machine also requires subtotal immersion of the patient within a water bath. Newer second-generation ESWL machines marketed today have almost universally eliminated the need for patient immersion. They also have much-reduced anesthesia requirements. The reduced anesthesia requirements promise a further reduction in the already minimal morbidity associated with ESWL. This reduced anesthesia requirement, however, has been achieved only at the expense of some decrement in machine power. The original Dornier HM3 lithotriptor remains the "gold standard" device in terms of its proven ability to produce adequate stone fragmentation over a wide range of stone size and composition, using the fewest number of shock waves.

Among the second-generation lithotriptors, a variably lessened efficiency in stone fragmentation is weighed against variably lessened anesthesia requirements. At one end of the spectrum of the second-generation lithotriptors are the piezoelectric devices, which produce the least patient discomfort during treatment, allowing many patients to be treated with no anesthesia. Electromagnetic devices now available allow most patients to be treated with only intravenous sedation. Gains in anesthesia requirements, however, are offset to some degree by the need for many more shock waves for each stone and often many treatment sessions. At the other end of the spectrum of second-generation lithotriptors are machines that still use a spark-gap electrode power source, such as the United States-made Medstone STS machine. These machines more closely approximate the fragmentation results and retreatment rates achievable with the original HM3 machine, while still allowing most patients to be treated with only light intravenous sedation.

All of the new second-generation lithotriptors have in common a notable reduction in anesthesia requirement. With their use, patients are awake and comfortable during the treatment of their kidney stones. Patients can be ambulatory and resume normal oral intake immediately after the completion of ESWL and thus be treated as outpatients. Many patients who might otherwise have avoided the treatment of their kidney stones find ESWL much more ıttractive with such a regimen. Perhaps even more important, the ability to deliver treatment with minimal or no anesthesia extends the ready applicability of ESWL to that group of patients with nephrolithiasis and severe coexisting medical problems in whom the risks of anesthesia might be prohibitive.

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Male Infertility Update

THERE HAVE BEEN SEVERAL advances recently in the field of male infertility, including improvements in vasovasostomy and vasoepididymostomy, the micromanipulation of human gametes, the ease of measuring antisperm antibodies, and further tests of the fertilizing capacity of sperm including the sperm penetration assay (or hamster test).

About 500,000 men a year undergo a vasectomy in the United States for permanent sterilization. With the increase in the divorce and remarriage rates, many of these men wish to have their vasectomies reversed. Beginning in the mid-1970s, the operating microscope came into wide use to aid in the anastomosis of vasa deferens. It soon became apparent that more was needed than simply reconnecting the newly severed ends. At times, the fluid seen from the upstream portion of the vas was inspissated and contained no sperm. With the use of the operating microscope, attempts were then made to reconnect the vas to a proximal area, such as the